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(..../c, 7-p3,21)

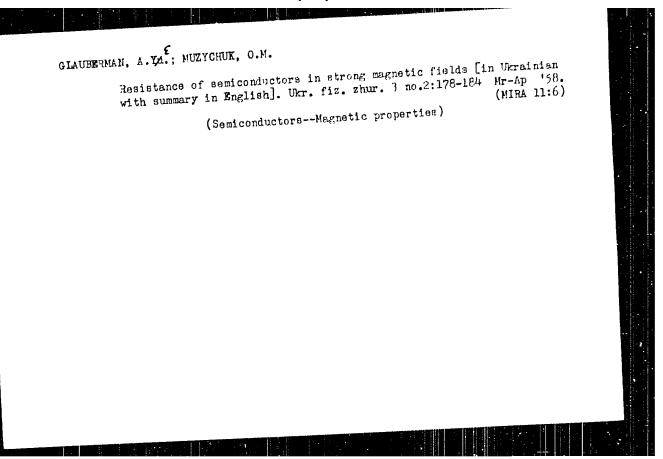
GLAUBERMAN, A. Ye.

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(The Physics of Dielectrics; Transactions of the All-Ditor So ference on the Physics of Dielectrics) Mackey, holeyo AM EMSA, 1958. Rep. 2 1 00 capaca proceed

This volume publishes reports presented at the Ash-Walon Such , note to the Physics of Directories, held to Body spectrals in American 1976 on reported by the Physics of Directories, held to Body the Fragates of the Directories to the University of the First besity the Attack the of the Directory of the Wirinbeskiy the Attack the of the Directory that the Local Legisland Department of the University Reporters and the Attack the Directory of the University Reporters and Directory of the University Company Reporters and Directory of the University of the University



AUTHOR:	310.2005 and 1 - 0 - 1
TTLU:	Theory of Spaness with a Declarity Law of the Intermetion of Particles (is represented as a testinal and represented as a section)
PERIODICAL:	Tryestipe Akademii Walir SSSK, Semija Bin. Heddaya. 1955, Wellert, Wm. 5. 1. Physician (SSSR)
ABSTRACT:	A rigorous statistic scates the ry of the interaction particles has been a recombally be welcome contail, or the basis of the methods by E. H. Bestignilly (Refer to the basis of the methods by E. H. Bestignilly (Refer to the basis of the methods by E. H. Bestignilly (Refer to the basis of the method report leafs it. the penetal discontinuation along original interaction is common in constitutes gos or liquide in which common potential. This potential is peaken the distance common potential. This potential is peaken the stigated particle between the gravity-conters of two investigated particles on the orientation of the lines of the senter in the spand on the pricetation of the "ares" of these particles. For the sales of simplicity the arther assumes all partic

Theory of Systems with a Non-Central Law of the Interaction of Particles

E 12 3 6/31

class to be homogeneous. He investigates that the the density of which is of such a nature that the required functions $F_{\rm p}$ can be divided into series according to the degree of penalty, i.e. has relied to right when solving the equation of the traction of distribution when solving the equation of the traction of distribution $F_{\rm p}$: $F_{\rm p} = C_{\rm p} \exp{(-U_{\rm p}/e)}$

Higher approximations can be attained without great informatives, but the calculations are in that case very voluminous. In the case of dipole gas, \$\pi\$: \$\mathbb{P}\$ cos\$ must be put in the external homogeneous electric field. The formula by Shickmayer, or the more simple formula by Keer, may be applied to such a resential. Without going into the details of the quantitative development of the into the author states that the proposed general theory theory, the author states that the proposed general theory enaily comprises the systems consisting of axially symmethically symme

Card 2/4

Theory of Systems with a Non-Central Law of the Interaction of Particles

48-22-3-6/30

tric molecules with a constant jurdrupole mement, or of axially symmetric melecules without moment and slightly marked orientational interaction. A comparison with the test for the gases C_2H_6 and CO_2 at $\frac{7}{4}$ = 0 shows with the test for the gases C_2H_6 and CO_2 at $\frac{7}{4}$ = 0 shows

that with corresponding selection of the value $\lambda^2 \frac{\gamma^2}{\Upsilon^2}$ = const. Satisfactory approximations can be achieved with respect to the experimentally obtained data. The second system investigated on the basis of the method developed by Bogolyubov was the dipole-crystal. The system in which the gravity centers of the dipoles are firmly fastened in the nodes of the lattice, was assumed to be a system of heterogeneous particles. The type of the particle is determined by the vector of the lattice acd in which its center of gravity is located. The calculation of the structural coefficients σ_i for different structures

Card 3/4

makes numerical calculation possible. With $\beta < 0.3$ the linear approximation of the function $L(\beta)$ can be applied. The simple formula:

Theory of Systems with a Mon-Central Law of the Interaction of Particles

48-22-3-6/30

 $P = \frac{np^2}{3\pi T} \left(1 - \frac{\chi^{0} 1}{\chi}\right) \Xi$

in which case E is the external field - is obtained for the polarization P in selected approximation. If it is assumed that $E=(\xi+2/5)/E$, in which case E is the mean macroscopic field in the dielectric

$$\frac{\xi-1}{\xi+2}=\frac{\sqrt{\pi}}{3}\cdot\frac{np^2}{3KT}\left(1-\frac{y^01}{3}\right)+\cdots$$

is obtained for the dielectric constant which is only correlated with the orientational effect. The acthod investigated makes it possible in principle to take account of the interaction of any character. The theory may be extended to dipole-liquids.

There are & references, 2 of which are Soviet.

ASSOCIATION: L'vovskiy Jos. universitet im. Ivana Franko (Livov State University imeni Ivan Franko)

Library of Congress AVAILABLE: 1. Particles--Theory 2. Dielectries--Properties Card 4/4

48-22-3-7/30 Glauberman, L. Ye., Spitkovskiy, L. Z. -Triond: On the Polarization of Ionic Displacement in Complex Ionic Crystals (O polyarizatsii ionnogo smeshcheniya v slozhnykh TITLE:

ionnykh kristallakh)

Investiya Akademii Hauk SSSR, Seriya Finicheskaya, 1958 Vol. 22, Nr 3, pp. 260-262 (USSR) PERIODICAL:

The formula for the polarizability of the displacements of ions of different kind as well as the presence of numerical ABSTRACT:

estimations of these values must be known (Refs 1 and 2) for the establishment of a molecular theory of the dielectric properties of the ionic crystals, especially of the crystals of barium-titanate. In the case of the symmetric binary systems of the type of NaCl-crystal, the calculation is simple With complex crystals it becomes difficult. The authors gave a simple General calculation scheme of pdarizabilities of ionic displacement for crystals of random structure with a random number of ion-types in the present report. The charges

ek are displaced to $\int_{k}^{\infty} k$ under the influence of the external field. The full potential energy of the system of charge

which refer to the unit cell, is equal to:

Card 1/3

On the Polarization of Ionic Displacement in Complex Ionic 48+22-3-7/39 Crystals

 $\sum_{l=1}^{h} \left[\frac{1}{2} u_l - e_l \left\{ (r_{lx}^0 + \xi_l) \right\} \right]$ A system of equations with the solution of which the formula $d_k = \frac{e_k 6}{E_k D} \prod_{l=1}^{n} e_l A_l^k$ for the polarizability is obtained,

results from the calculation of the equilibrium conditions of the lattice in the presence of an external field with the ansumed terms $(\partial^2 U_1/\partial \xi_1 \partial \xi_j)_0 = U_{ij}$. The formula found for α_k

may be applied when solving the equation systems for effective fields which were given for the first time by G. I. Skanavi (Ref 1), as well as for the equation systems which occur in the theory of barium-titanate developed by Glauberman snf

 $\alpha_k = \frac{e_k}{E_k \mathcal{D}^*} \sum_{l=1}^{n} e_l E_l A_l^{*k} + \frac{e_k B_k^{*}}{E_k \mathcal{D}^*} \quad \text{for } x_k$ Lubchenko. The formula

is obtained from a somewhat different calculation scheme where only operations with effective fields acting on ions of different types are carried out. In the equations for effective fields of the type of those investigated in (Refs 1 and 2) the polarizabilities $\overline{\zeta}_k$ are multiplied with the corresponding

Card 2/3

On the Polarization of Ionic Displacement in Complex It. 6 1:-22-3-7/34

Crystals

effective fields. The second term of the right part of (6) can consequently by enaily numerically estimated. The first

can be numerically estimated only in the case of substitution of all effective fields by a certain effective mean field. The formulae (4) and (6) may be of use in the molecular quantity-theory of dielectric properties of ionic crystals.

There are 3 references, 2 of which are Soviet.

L'vovskiy gos, universitet im. Ivana Franko (Livev State ASSOCIATION:

University imeni Ivan Franko)

Library of Congress AVAILABLE:

1. Crystals--Polarization ... Crystals--Dielectric properties

Card 3/3

CIA-RDP86-00513R000500010013-1" APPROVED FOR RELEASE: 09/24/2001

5(4) AUTHORS:	Glarourman, A. Ye., Pecharokiy, K. K. 307/76-32-11-21/32
TITLE:	Thermodynamic Prostient of Real Jases With an Orientation Thermodynamic Prostient of Real Jases With an Orientation Interaction (Termodinemicheckiye funktali realingkh garov o Interaction (Termodinemicheckiye funktali realingkh garov o orientatsionnym vysimaleystviyem)
PERIODICAL:	Zharnal fizicheckey khiril, 1919, Vol (2, hr 1), if 255 (USSR)
ABSTRACT:	The method devised by N. N. Bogolyubov (Ref 1) (in the statistic physics of systems of interacting particles) on the tistic physics of systems of interacting particle complexes, functions, concerning the distribution of particle complexes, functions, concerning the distribution of particle complexes, functions, concerning the distribution of the law in principle comprises systems with different types of the law in principle comprises systems with different types of the law in principle comprises systems which are shown and the above-mentioned case leads to two results (aquations (1) and (2)). If the function of the distribution (aquations (1) and (2)). If the function of the distribution of the molecules (in the corresponding approximation) is known the mean and free energy of the system can be estate of equilibrium with it all quantities characterining the state of equilibrium with it all quantities characterining the secondary virial of this system. In the present case the secondary virial coefficients are calculated for a dipolar gas, as well as for coefficients are calculated for a dipolar gas, as well as for a gas with non-spherical (symmetrical about an axis) malecular
Gert 1/2	

307/76-32-11-21/32

Thermodynamic Functions of Real Japan With an Orientation Interaction

with weak orientation interaction, and the function of the coefficients versus the temperature were given in a graph (GO_2, G_2H_6) and GHO_2F - Figs 1-x). The constants of the central

forces o and & were determined according to the method by A.D. Bucklingham (Bukingam) (Ref 4). As the virial coefficients may also be directly calculated (Ref 12) without using the method of the distribution function of complex particles, the

mentional curves are mainly only of methodic interest.

There are 5 figures and 12 references, 5 of which are Soviet.

ASSOCIATION:

Liverskiy geardarstvensyy universitet is. Ivana Franks

(Liver State University imeni Ivan France)

SUBMITTED:

February 28, 1967

Card 2,'2

A CLARIDER NEW PHASE T BOOK EXPLITATION SOV/2809

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Termodinamika i stroyeniye rastvorov; truly soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 p. 3,000 copies printed.

Ed.: M. I. Shakhparonov, Doctor of Chemical Sciences; Ed. of Publishing House: N. G. Yegorov; Tech. Ed.: T. V. Polyakova.

PURPOSE: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Officers of the conference are listed in the Foreword. A list of other reports

Card 1/10

Thermodynamics and Structure (Cont.)	\$ 07/2809	
also read at the conference, but not included in are given. Among the problems treated in this word electrolytic solutions, with sonic measurement, and thermodynamic properties of various mixtures scopic analysis, etc. References accompany indivi-	r are. Helectric . soectro-	
TABLE OF CONTENTS:		
Foreword	3	
Glauberman, A. Ye. Present State and Some Problems Molecular Theory of Electrolytic Solutions	of the 5	
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Kelbg, G. Statistical Mechanics of Electrolytic Sol Conductivity	utions. 28	

FREEKML', Yakev Ii'ich; SEMENOV, N.N., akademik, clavnyy red.;

"HAUBERMAN, A.Ye., prof., zamemitel' glavnogo red.;

BARKOVSKIY, I.V., red.izd-va; SKIRKOVA, A.V., tekhn.red.

[Selected works] Sobranic izbrannykh tradev. Moskva,

Izd-vo Akad.mank SSSR, Vol.3, [Kinetic theory of liquids]

Kineticheskala teorila zhidkostei. 1959, 458 p. (MIRA 13:1)

(Liquids, Kinetic theory of)

69155 24,2120 5/139/59/000/06/011/034 E032/B114 AUTHORS: Glauberman, A.Ye., and Porfir'yeva, L.A. TITLE: On Higher Approximations in a New Form of "Plasma" Expansions PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 76-34 (USSR) ABSTRACT: Tyablikov and Tolmachev (Refs 7 and 8) have put forward a method for solving Bogolyubov's equations for a system of charged particles, using expansions in powers of the "plasma" parameter v/r_d where v is the volume per particle and r_d is the Debye radius. In this way they obtained the first approximation for the binary distribution function. The present paper is concerned with the derivation of higher approximations for the distribution functions of particle complexes and, in particular, for the binary function. The calculation is Card carried out for a multicomponent system of interacting 1/1 charged particles, the system being neutral as a whole. There are 8 Soviet references. ASSOCIATION: L'vovskiy gosuniversitet imeni I. Franko (L'vov State University imeni I. Franko) SUBMITTED: February 18, 1959

24 (0)

AUTHOR: Glauberman, A. Ye. SCV/53-68-1-17/17

TITLE:

Vasiliy Stepanovich Miliyanchuk (Deceased)

PERIODICAL:

Uspekhi fizicheskikh nauk, 1959, Vol 68, Nr 1, jp 197 - 198

(USSR)

ABSTRACT:

On November 3, 1958, Professor V. S. Miliyanchuk, Duster of Physical and Mathematical Sciences, Head of the Chair of Theoretical Physics at Livovskiy gosudarstvennyy universitet in. I. Franko (L'vov State University imeni I. Franko)died in his 54th year of life. The author of this obituary gives a brief biography of the deceased, Miliyanchuk published his first scientific articles on theoretical problems of atomic spectra in the Periodical of Physics and in the Byuleten Pol'skoy Akademii nauk (Cracow). In 1933, he commenced his pedagogical career as an assistant of the Chair of Theoretical Physics at Livey University (headed by Professor A. Rubinovich), where he returned as a Senior Assistant after completing further studies in Warsaw, Vilnyus, and Leipzig, in 1937. After the Unification of West Ukraine with the USSR he was appointed Professor of Theoretical Mechanics, and since 1946 he held the Chair of Theoretical

Card 1/2

Physics of L'vov University. He devoted himself to the investi-

Vasiliy Stepanovich Miliyanchuk (Deceased)

507/53-68-1-17/17

gation of atomic spectra, the forbidden lines, and the influence exerted by inhomogeneous fields upon the nature of the lines. In 1957, Miliyanchuk defended his dissertation for the degree of Doctor of Physical and Mathematical Sciences at the Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (Department of Physics of Moscow State University) and was appointed Professor of the Chair of Theoretical Physics. He further worked in the field of quantum electrodynamics and general quantum field theory, the theory of solids, the theory of atomic collisions, etc. Finally, mention is made of his pedagogical and editorial work (edition of Fizicheskiy sbornik L'vovskogo universiteta, Trudy X Vsesoyuznoy konferentsii po spektroskopii in two volumes). There is 1 figure.

Card 2/2

24(2)

307/20-126-3-23/69

AUTHORS:

Glaubersan, A. Te., Vladimirov, V. V., Stasyuk, I. V.

TITLE:

A New Form of the Polar Model of a Jrystal (Novaya forma poly-

arnoy modeli kristalla)

PERIODICAL: Doklady Akademii mauk DSSR, 1953, Vol 126, Kr 3,

pp 543 - 545 (JSSR)

ABSTRACT:

In the first part of the present paper the so-called polar model, which is of great importance in the many-electron theory of solids in connection with transport processes, is dealt with. If the polar states are taken into account, it is

possible to represent the Hamiltonian of a crystal in form of the equation (1) (in second cantization), in which the complex index denotes the number of lattice points, the state of the valence electron, and the opin. The formulation of the problems of elementary excitation (maniformuscular) is considered to be of basic and practical importance, and so is the theoretical investigation of the polar model by the method introduced by S. Shubin and S. Vonsovskiy. Here, the bilinear groups of Permi amplitudes are replaced by the sam of a group of new Bose operators. Is the accord part of this paper the new form of the theory is discussed, and it is initially pointed out

that it contains no major err rs. By a canonical transformation

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A New Form of the Polar Model of a drystal

507/30-126-3-23/69

of the Fermi operators the excitation operators of the dyads and holes are obtained. For purposes of illustration, the problem of the atomic demiconductors in then investigated according to the new method, and a comparison is drawn with that developed by Shubin and Vensovskiy. The scheme introduced makes it possible to investigate the saturated spin background and the displaced background, as well as to calculate the excitons. There are 6 references, 5 of which are Soviet.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet im. Ivana Franko (L'vov

State University imeni Ivan Franko,

PRESENTED: February 16, 1959, by N. N. Bogolyubov. Academician

SUBMITTED: January 12, 1959

Card 2/2

S/181/60/002/01/27/035 B008/B014

AUTHORS:

Glauberman, A. Ye., Vladimirov, V. V., Stasyuk, I. V.

TITLE:

Theory of Elementary Excitation in Atomic Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 133-143

TEXT: In theoretical studies on the multielectron theory of solids the polar model is often based on the method developed by S. I. Shubin and S. V. Vonsovskiy. As the usual scheme of this method causes many difficulties, the authors of the article under review devised a new general scheme for the "re-denotation" of operators. This scheme permits a logical development of the theory of elementary excitation in semiconductors if one s-state and the p-states are taken into account. The statistics of true elementary excitations results unambiguously from the model. The separation of the background and "averaging" over the background are fully satisfied. An introductory rule is set up for exciton operators in this connection. The scheme described apparently offers special advantages in the case of the "open spin" degenerate background. Here, the problem of averaging over the background has not yet been solved.

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"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500010013-1

Theory of Elementary Excitation in Atomic Crystals

S/181/60/002/01/27/035 B008/B014

satisfactorily. The rules governing the elimination of true excitation from undefined operators (if they do not agree with one another) also result unambiguously from the model. These rules permit an accurate verification of the terms of "quadratic" approximation as well as the terms of higher orders of magnitude describing kinetic phenomena. Mention is made of Frenkel!. There are 7 Soviet references.

ASSOCIATION: L'vovskiy gosudarstvennyy universitet (L'vov State University)

SUBMITTED:

February 26, 1959

VB

Card 2/2

GLAUBERMAN, A.Ye.; MUZYCHUK, A.M. [Muzychuk, O.M.]

Many-electron theory of liquid semiconductors. Ukr. fiz. zhur. 5
no. 5:597-605 S-0 '60. (MIRA 14:4)

1. L'vovskiy gosudarstvennyy universitet.
(Semiconductors)

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500010013-1

80030

\$/048/60/024/01/08/009 B006/B014

24.7700

AUTHOR:

Glauberman A. Ye

TITLE:

A New Type of a Polaron Model of a Crystal

PERIODICAL

Izvestiya Akademii nauk SSSR Seriya fizicheakaya, 1960.

Vol. 24, No. 1, pp. 101-103

TEXT: The article under review was read at the Second All Union Con ference on the Physics of Dielectrics (Moscow, November 20 27, 1958) In the theory of weakly excited crystals in which the number of elementary excitations is small (in the so-called polaron model). a method permitting separation of the part of the Hamiltonian that contains elementary excitations, is of special value. Here, the author suggests the method devised by Shubin and Vonsovskiy, on the basis of theoretical studies of metals, semiconductors, and dielectrics However, two difficulties are encountered in transforming the second quantization Hamiltonian: First, the open tors of the quasi-particles are introduced as Bose type operatown, which is not permissible from a physical point of view secondly, the setup of the Hamiltonian in the new operators is complicated, so that

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80030

A New Type of a Polaron Model of a Crystal

S/048/60/024/01/08/009 B006/B014

it is necessary on the strength of qualitative considerations to express the bilinear groups of Fermi amplitudes by groups of state operators of the lattice points. To obtain the excitation operators it is necessary to go over to the quasi-classical approximation for all other operators. In view of these considerations the author derived an expression for an excitation Hamiltonian on the basis of linear transformations of the Fermi

amplitudes. This expression reads $H_{\text{exc}} = eF \stackrel{?}{Q} R_{qy} \left(\stackrel{\uparrow}{Q} \stackrel{\uparrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \right) + \\ + \mu_B H \ th \frac{\mu_B H}{kT} \left[N - \sum_{q} \left(\stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\uparrow}{Q} + \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \right) \right] + \frac{1}{2} \left(A + I \right) \stackrel{?}{Q} \left(\stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\uparrow}{Q} + \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \right) + \\ + \sum_{q \neq q} L_{qq}, \left(\stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\uparrow}{Q} - \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \stackrel{\downarrow}{Q} \right) \quad \text{The only deviation from the final result.}$

which occurs in this approximation, is that the operators of the dyads and holes appear as Fermi-type operators. The scheme suggested here has a universal character and may be extended for the case of a germanium-type or impurity crystal. V. Vladimirov and I. Stasyuk are mentioned in this article. There is i Soviet reference.

Card 2/2

\$/053/60/071/01/03/011 B006/B011

AUTHORS:

Glauberman, A. Ye., Stasyuk, I. V.

Third Conference on the Theory of Semiconductors

PERIODICAL: Uspekhi fizicheskikh nauk, 1960, Vol. 71, No. 1, pp. 117-130

TEXT: This Conference was held at L'vov from April 2 to 9, 1959, and was organized by the Komissiya po poluprovodnikam AN SSSR (Commission for Semiconductors of the AS USSR) and the Komissiya po poluprovodnikam AN USSR (Commission for Semiconductors of the AS UkrSSR) jointly with the L'vovskiy gosudarstvennyy universitet im, I. Franko (L'vov State University imeni I. Franko). The Conference was attended by 200 delegates from Moscow, Leningrad, Kiyev, Sverdlovsk, Khar'kov, L'vov, Minsk, Tbilisi, Tartu, and other centers. In total 86 lectures were heard. The first address was delivered by F. T. Koval', Secretary of the L'vov oblast' Committee of the Ukrainian CP, followed by Professor A. I. Yurzhenko, deputy rector, who spoke on behalf of the rector of L'vov State University The Conference was opened by Professor S. I. Pekar, who spoke on the development of the semiconductor theory in the USSR in the two and a half

Card 1/10

Third Conference on the Theory of Semiconductors S/053/60/071/01/03/011 B006/E011

years elapsed since the previous conference. A great number of lectures was devoted to the nany-electron theory of solids. Lecturers were S. V. Vonsovskiy, M. Sh. Giterman, G. I. Gusev, G. G. Taluts on the treatment of electronic excitations with the many-electron theory; V. I. Cherepanov and V. S. Galishev on the selection rules for optical exiton transitions in dipole and quadrupole approximation; Yu. A. Firsov took part in the discussion. Ye. N. Agafonova and I. A. Korunova spoke on the consideration of the influence exerted by Bose excitations on the thermal conductivity of atomic semiconductors. In his lecture concerning the theory of elementary excitations in semiconductors, A. Ye. Glauberman suggested a new form of a polaron model of the crystal. This new method is outlined in its main features. V. L. Bonch-Bruyevich dealt with some problems of the theory of electron - hole plasma in semiconductors. M. Ya. Azbel' took part in the discussion. Further lectures were devoted to the theory of exiton excitation in crystals. Lecturers were S. I. Pekar on the theory of electromagnetic waves in a crystal in the zone of exiton absorption, I. M. Dykman and S. I. Pekar on light waves in crystals in the zone of exiton absorption and the impurity photoeffect; Yu. M. Popov and V. M. Agranovich took part in the discussion; V. A. Moskalenko on

Card 2/10

Third Conference on the Theory of Semiconductors S/053/60/071/01/03/011

exiton energy in ion crystals, E. M. Rashba on the effect of resonance excitation transfer in the theory of exitons with large radius; A. G. Samoylovich and A. A. Lipnik on bond and decay of Mott exiton, S. I. Pekar and M. I. Kaganov took part in the discussion. A. V. Tulub spoke on the free path length of the exiton in polar crystals. Further lectures were devoted to the optical properties in semiconductors. Lecturers were L. E. Gurevich and Z. I. Uritskiy on the theory of infrared absorption of crystals (Ye. F. Gross, B. P. Zakharchenya, and Pavinskiy are quoted); A. V. Sokolov and V. P. Shirokovskiy on the theory of optical properties in semiconductors; O. V. Konstantinov and V. I. Perel' on the effect of spatial dispersion in the passage of waves through a semimetal in a strong magnetic field (M. Ya. Azbel' and M. I. Kaganov took part in the discussion); A. G. Samoylovich, M. I. Klinger, and L. L. Kornblit on the statistical theory of linear irreversible processes; Yu. P. Irkhin and Ye. A. Turov on the phenomenological theory of electrical conductivity of ferromagnetic semiconductors, A. I. Ansel'm and I. G. Lang delivered a lecture on the theory of two-phonon scattering of conduction electrons in atomic crystals, M. A. Krivoglaz on the theory of phonon thermal conduction of crystals, A. I. Ansel'm and V. M. Agranovich took part in the

Card 3/10

Third Conference on the Theory of Semiconductors $\frac{5/053/60/071/01/03/011}{8006/8011}$

discussion. Further lectures were delivered by Yu. M. Popov and V. A. Chuyenkov on the dependence of the mobility of electrons and holes in germanium and silicon on the electric field strength at low temperatures, M. I. Iglitsyn, Yu. A. Kontsevoy, and K. V. Temko on the calculation of the conduction recovery time of the basic region of the planar transition by taking into account the dependence of the carrier lifetime on the injection level; E. I. Adirovich and Ye. M. Kuznetsova on the capacity and the electric breakdown of p-n transitions; V. A. Chuyenkov on the theory of electric breakdown in semiconductors; L. V. Keldysh on the kinetic theory of impact ionization in semiconductors, G. V. Gordeyev on the current multiplication due to impact ionization on the p+n transition: A. Yu. Leyderman and P. M. Karageorgiy-Alkalayev on the application of the scheme of a semiconductor with one impurity level to explain the photocanductivity and photoactivity quenching effects. A further group of lectures was devoted to the study of the structure of the energy spectrum of the current carrier. Lecturers were A. I. Gubanov and A. A. Nran'yan on the investigation of the energy spectrum of semiconductors with sphalerite structure; K. D. Tovstyuk and I. V. Gvozdovskiy on the energy spectrum of current carriers in crystals having the structure of zinc

Card 4/10

Third Conference on the Theory of Semiconductors S/053/60/071/01/03/011 B006/B011

blende; V. A. Chaldyshev on the structure of the energy spectrum of crystals with chalcopyrite lattice (Smolukhovskiy is mentioned); Ye. I. Cheglokov on the application of the method of equivalent orbits for the calculation of the valence bands of some covalent crystals; G. Te. Pikus and G. L. Bir on the influence exerted by deformation on the energy spectra and energetic properties of p-type germanium and silicon; A. I. Ansel'm took part in the discussion. The following lectures were devoted to the theory of impurity centers, their luminescence, and to the calculation of the recombination of the various centers in the crystal Lecturers were I. A. Mirtskhulav on the determination of the recombination coefficients of different centers in the crystal (S. I Pekar is mentioned); A I. Gubanov, S. I. Pekar, and V. L. Bonch-Bruyevich took part in the discussion; A. M. Ratner and G. Ye. Zil'berman on the theory of luminescence of impurity centers; I. N. Kristofel' on the quantum-mechanical calculation of adiabatic potentials and spectra of luminescence center in KCl-Tl; Yu. E. Perlin on the consideration of the polaron effect in the theory of the many-photon ionization of impurity centers; K. K. Rebane on the relationship between recombination luminosity and conductivity in crystal phosphors; V. M. Buymistrov and V. N. Piskovyy on an investigation of the

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Third Conference on the Theory of Semiconductors $\frac{5/053/60/071/01/03/011}{8006/8011}$

accuracy of the variation method in the problem of the impurity abscription in silicon crystals; M. M. Zaripov, V. M. Vinckurov, and V. G. Stepanov on the paramagnetic resonance in rutile single crystals; A. 3. Samoylovich and S L. Korolyuk on the theory of elementary excitations in atomic semiconductors with two valency electrons on each atom; S, V. Vonsovskiy and M Sh. Giterman on the treatment of ion crystals with the many-electron theory; I. V. Stasyuk on the calculation of the magnetic resistance of semiconductors; V. V Vladimirov on the calculation of the contribution given by Frenkel' exitons in the magnetic conductivity of semiconductors; A. Ye. Glauberman and I. T. Tsymburskaya on the consideration of the character of the chemical bond in the theory of the magnetic resistivity of germanium type semiconductors; K. B. Tolpygo on the theoretical investigation of the properties of not fully polar crystals. The structure of the carrier energy spectrum was dealt with in the following lectures: A. I. Gubanov and F. M. Cashimzade (Investigation of the structure of semiconductors of the type of CdIn2Se4 with the method of the group theory); K. Ya. Shtivel man (investigation of p-type energy spectrum in crystals with diamond structure by means of the many-electron theory); O. V Kovalev and T. Ya. Lyubarskiy (contact of energy bands in

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Third Conference on the Theory of Semiconductors \$/053/60/071/01/03/011 B006/E011

crystals); Ye. K. Kudinov (computation of p-type energy spectrum in Bi2Te; under consideration of the bond character); E. I Rashba and V. I. Sheka (investigation of the band structure of semiconductors with the group theory); V. I. Cherepanov (optical properties of semiconductors in the infrared); S. A. Moskalenko (exiton absorption of light in cuprous oxide at the long-wave edge of self-absorption); A A Vorob'yev (relationship between additional absorption and chemical composition in alkali halide crystals); I. V. Abarenkov (investigation of the properties of F-centers); L. E. Gurevich and I. P. Ipatova (Faraday effect in semiconductors on the free carriers); I. D. Potekhina (relaxation processes in a phototriode); V. Ye. Khartsiyev (kinetics of photo- and thermostimulation processes); Te. N. Agafonova and A. A. Yakub (influence of anisotropy of the energy spectrum of an atomic semiconductor on the thermoelectromotive force); G. A. Zholkevich (experimental investigation of the change in photoelectric properties of zinc selenide layers in dependence on their structure); M. I. Kaganov and V. M. Tsukernik (influence of thermoelectric forces on the skin effect in metals); A. D. Chevychelov (volt-ampere characteristic of the p-n transition under consideration of the electron - hole recombination in the transition layer); A. G. Samoylovich and M. I. Klinger

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(investigation of anisotropic weak electron-phonon scattering in anisotropic energy spectra of electrons and holes by means of a general nonequilibrium distribution function); B. Ya Yurkov (computation of the range-energy ratio for silicon-type crystals); Ye P Pokatilov (investigation of the carrier resonance under the action of ultrasonic waves); V. A. Kovarskiy (investigation of the dependence of thermal transitions of electrons in semiconductors on the electron-phonon coupling constant); I. G. Lang (two-phonon processes in the scattering of conduction electrons in ion crystals); L. E. Gurevich and G. A. Roman (calculation of the thermal conductivity of ferromagnetic semiconductors at low temperatures); B. Ya. Moyzhes (heat-transfer in monoaxial crystals due to electromagnetic radiation); Ye. D. Devyatkova and I. A. Smirnov are mentioned; N. P. Kontorovich and Yu P Irkhin (electrical conductivity of magnetite at low temperatures); A. G. Samoylovich and V. M. Nitsovich (influence of the correlation between electrons on the electric properties of a semiconductor with narrow impurity band); V. P. Shabanskiy (non-equilibrium processes in impurity semiconductors); V G. Skotov (conductivity of semiconductors at low temperatures in the strong magnetic field); F. G. Bass and M. I. Kaganov (theory of galvanomagnetic phenomena on the basis of

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Third Conference on the Theory of Semiconductors \$/053/60/071/01/03/011 B006/B011

classical equations of motion if $\mu E \ll kT);$ I. M. Tsidil'kovskiy and V. F. Shirokovskiy (galvano- and thermomagnetic phenomena in n- and p-type germanium under consideration of the carrier spectrum); S. M. Ryvkin, Yu. L. Ivanov, A. A. Grinberg, S. R. Novikov, and N. D. Potekhina (concentration distribution of the minority carrier in the magnetic field); V. L. Gurevich (absorption of ultrasonics in metals in the magnetic field, A. M. Kosevich and V. V. Andreyev (the collision integral in the quantum-kinetic equation); M. I. Kaganov (on the relaxation of the magnetic moment in ferromagnetic dielectrics); K. B. Vlasov and B. Kh. Ishmukhametov (rotation of polarization plane of elastic waves in magnetically polarized magnetoelastic media); Ye A. Turov (theory of weak ferromagnetism). The following problems were discussed at the seminar on the theory of p-n transitions: (1) calculation of the statistical volt-ampere characteristic of the p-n transition at high injection levels (lecture by V. I. Stafeyev); (2) computation of the statistical volt-ampere characteristic of the p-n transition in the case of recombination in the zone of volume charge (lecture by V. I. Stafeyer and B. V. Tsarenkov); (3) influence of volume charge of moved carriers on the electric breakdown of a strong asymmetric pan transition (lecture by A. I. Uvarcv). The following

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delivered lectures at the seminar on the mechanism of luminescence and electrical conductivity in ion crystals: Ch. B. Lushchik (luminescence in alkali halide crystals); P. V. Meyklyar and V. V. Gladkovskiy (dark conductivity of silver bromide and its change after exposure to light); the following spoke at the seminar on Green functions in statistical physics: V. L. Bonch-Bruyevich and Sh. M. Kogan on the theory of Green temperature quantum functions, and N. N. Bogolyubov and S. V. Tyablikov on advanced and delayed Green functions in statistical physics. There are 13 references, 9 of which are Soviet

Card 10/1:

"APPROVED FOR RELEASE: 09/24/2001 CI

CIA-RDP86-00513R000500010013-1

89707

S/139/61/000/001/015/018 E032/E514

26.2311 AUTHORS:

Glauberman, A. Ye. and Porfir'yeva, L. A.

TITLE:

On "Plasma" Expansions

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,, Fizika,

1961, No.1, pp.147-149

TEXT: In a previous paper (Ref.1) the present authors discussed a general scheme for the determination of higher approximations in expansions in terms of the plasma parameter for functions describing the distribution of particle complexes in a system of interacting ions, which is neutral as a whole. The mutual potential $\underline{\underline{\mathbb{Q}}}_{\alpha\beta}$ was assumed to be finite at the origin, e.g.

$$\Phi_{as} = \frac{e_a e_s}{r} \left(1 - A_{as}(r) e^{-a_{as} r} \right) . \tag{1}$$

The present paper extends the discussion given in Ref.l to the general case of a neutral non-symmetric system. In this general case the equation for $h_{\rm ctf}$ is

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On "Plasma" Expansions $\frac{\partial}{\partial q_a^a} h_{ss}^b + \sum_{\epsilon} n_{\epsilon} \int \frac{\partial \Psi_{ac}}{\partial q_a^a} \left[h_{s\epsilon}^b + h_{at\epsilon}^0 + \frac{g_{s\epsilon}^a}{2} + g_{ac}^a g_{s\epsilon}^a \right] dq_{\epsilon} = 0.$ and, correspondingly $\frac{\partial}{\partial q_a^a} h_{at\epsilon}^a + \sum_{d} n_{\epsilon} \int \frac{\partial \Psi_{ad}}{\partial q_a^a} \left[h_{sed}^a + g_{sd}^a g_{sd}^a \right] dq_{d} = 0, \qquad (4)$ $h_{are}^0 = \sum_{d} n_{d} \int g_{ad}^a g_{et}^a g_{ed}^a dq_{d} \qquad (5)$ so that $h_{at\epsilon}^b = \sum_{e,d} n_{e} \int \left[g_{ae}^a \frac{g_{ee}^a}{2} - \frac{g_{ee}^a}{2} g_{ae}^a \right] dq_{e} + \frac{1}{2} \int g_{ad}^a g_{ee}^a g_{ee}^a dq_{d} \qquad (6)$ Card 2/4

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CIA-RDP86-00513R000500010013-1

On "Plasma" Expansions

\$/139/61/000/001/015/018 E032/E514

Finally, the binary distribution function in the general case is given by

$$F_{as} = \exp\left\{ v g_{as}^{o} \right\} \left\{ 1 + v^{2} h_{as}^{4} + v^{3} h_{as}^{3} + \ldots \right\}. \tag{7}$$

where $h^1_{\hat{\Omega}\hat{B}}$ is defined by Eq.(6). In the case of a system consisting of particles of the same sign and located in the compensating field of the space charge consisting of particles of the opposite sign, which are uniformly distributed in space and whose potential is given by

$$\varphi = \int \frac{\rho dq_{S+1}}{|q_1 - q_{S+1}|}, \qquad \rho = \text{const}, \tag{8}$$

the following results are obtained. The equations for the functions $\mathbf{c}_{1,\dots,s}$, which are defined by

$$F_{1\cdots s} = \exp\left(-\overline{U}_{1\cdots s}/\theta\right)C_{1\cdots s}$$
 (9)

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On "Plasma"Expansions

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(Tyablikov and Tolmachev, Ref.2) will in the latter case be of the

$$\frac{\partial C_{1...s}}{\partial q_{1}^{s}} + \frac{1}{H} \left(\frac{\partial U_{1...s}}{\partial q_{1}^{s}} - \frac{\partial \overline{U}_{1...s}}{\partial q_{1}^{s}} \right) C_{1...s} + \frac{1}{Hv} \int \frac{\partial \Phi([q_{1} - q_{s+1}])}{\partial q_{1}^{s}} \times$$

$$\times \left\{ \exp \left[-\frac{1}{\Theta} \sum_{1,j,l \in S} \overline{\Phi}(|q_{l} - q_{S+1}|) \right] C_{1,...,S+1} - C_{1,...,S} \right\} dq_{S+1} = 0.$$
 (10)

Finally,

$$h_{123}^{0} = \left[g_{14}^{0} g_{24}^{0} dq_{4}\right]$$

$$h_{12}^{1} = \int \left\{g_{13}^{0} \frac{g_{23}^{0^{2}}}{2} + \frac{g_{13}^{0^{2}}}{2} g_{23}^{0}\right\} dq_{4} + \int \int \int g_{14}^{0} g_{23}^{0} \frac{g_{34}^{0^{2}}}{2} dq_{4} dq_{4}$$
(11)

and similarly for other approximations of the distribution functions. There are 2 Soviet references.

ASSOCIATION: L'vovskiy gosuniversitet imeni Ivana Franko (L'vov State University imeni Ivan Franko)

SUBMITTED:

February 18, 1960

Card 4/4

GLAUBERMAN, A.Ye.; STASYUK, I.V.

Theory of elementary excitations in systems with an open-spin background. Fiz.tver.tela 3 no.7:2081-2096 Jl '61.

(MIRA 14:8)

1. L'vovskiy gosudarstvennyy universitet imeni Ivana Franko.

(Nuclear spin) (Crystal:-Models)

Or a the River

30331

\$/185/61/006/005/007/019

24,7700 (1043,1055,1144)

AUTHORS:

Stasyuk, I.V., and Hlauberman, A.Yu.

TITLE:

On the formation of impurity bands

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 5, 1961,

642 - 654

TEXT: The formation of impurity bands is considered by means of the many-electron theory. The present study is related to Ref. 2 (A.Yu. Glauberman, V.V. Vladimirov, I.V. Stasyuk: FTT, 2, 133, 1960). A semiconductor model is considered which is representative of germanium or silicon with pentavalent impurities. It is assumed that the crystals have a cubic structure as well as impurity atoms; the atoms of the principal sublattic (denoted by o) have two electrons each, and the impurity atoms (p - sublattice) - one electron each. The Hamiltonian of the electron system is

 $\hat{H} = \sum_{q\lambda'} E_{\lambda} a_{q\lambda'}^{+} A_{q\lambda'} + \sum_{qq'\lambda\lambda'} L(q\lambda, q'\lambda') a_{q\lambda'}^{+} a_{q'\lambda'} +$

(1.1)

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30331

S/185/61/006/005/007/619 D274/D305

On the formation of impurity bands

$$+\frac{1}{2} \sum_{\substack{q,q',W'\\kl'\neq f'}} \Phi(q \lambda q' \lambda', l \nu l' \nu') a_{q \nu f}^{+} a_{q' \nu' f'}^{+} a_{U \nu' f'} a_{U f}, \tag{1.1}$$

where q is the number of the lattice point, ν , 2 denotes the electrontron state (s or p), f is the electron spin;

$$L(q\lambda, q'\lambda') = \int \varphi_{q\lambda}^{\bullet}(\mathbf{r}) \sum_{p \neq q} V(\mathbf{r} - \mathbf{R}_p) \varphi_{q'\lambda'}(\mathbf{r}) d\mathbf{r};$$

$$\Phi\left(q^{i}q^{\prime}\lambda^{\prime},\,l\nu l^{\prime}\nu^{\prime}\right)=\int_{-\infty}^{\infty}\phi_{q\lambda}^{\bullet}\left(\mathbf{r}\right)\phi_{l},\left(\mathbf{r}\right)\frac{e^{2}}{\mid\mathbf{r}-\mathbf{r}^{\prime}\mid}\phi_{q^{\prime}\lambda^{\prime}}^{\bullet}\left(\mathbf{r}^{\prime}\right)\phi_{l^{\prime}\nu^{\prime}}\left(\mathbf{r}^{\prime}\right)d\mathbf{r}\,d\mathbf{r}^{\prime};$$

"Triplets" and "singlets" are considered in the σ -sublattice, and $\mathcal V$ "doublets" and holes in the ρ -sublattice. The transition to the operators of the quasi-particles is effected by means of

$$a_{\rho \tau_{1}}^{+} = \frac{1}{V \cdot 2} (\alpha_{\rho}^{+} + \beta_{\rho}),$$

$$a_{\rho \tau_{-\frac{1}{2}}}^{+} = \frac{1}{V \cdot 2} (\alpha_{\rho}^{+} - \beta_{\rho}),$$
(1.2)

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\$/185/61/006/005/007/019 \$274/\$304

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$$a_{ij}^{+} = \beta_{i}, \qquad a_{ip_{j}}^{+} = \alpha_{i}^{+},$$

$$a_{is_{-1}}^{+} = \beta_{i}, \qquad a_{ip_{-1}}^{+} = \alpha_{i}^{+}.$$

$$(1.2)$$

If the terms which describe pair creation or annihilation are neglected, the dislocation Hamiltonian is written in the second approximation:

$$\hat{H}_{p} = \hat{H}_{\alpha} + \hat{H}_{\beta} \tag{1.3}$$

where \hat{H}_{α} and \hat{H}_{β} are given by expressions. The terms of these expressions which contain K_1 and K_2 describe the migration of elementary dislocations from the principal sublattice to the impurity sublattice and conversely. These processes lead to the formation of impurity bands of considerable width. Further, the Hamiltonian \hat{H}_{α} is diagonalized. This involves a transition to k-space (quasi-momentum space). After transformations, one obtains:

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On the formation of impurity bands

The energies $E_1(k)$ and $E_2(k)$ are those of the elementary dislocations, described by the Permi-operators \mathbb{T}_{1k}^+ , \mathbb{T}_{1k}^- , and \mathbb{T}_{2k}^+ . These elementary dislocations correspond to "triplets" in the principal sublattice (the conductance electrons of band theory). With low impurity-concentrations the width of the impurity band is given by

$$\triangle \mathbb{E}^{\dagger} = 12P(\mathfrak{d}). \tag{2.54}$$

The dependence on concentration, of the integral P(d) which describes the interaction between impurity sites and principal sites, can be estimated by using quasi-hydrogenic wave-functions instead of atomic wave-functions. Thereupon one obtains

$$\triangle E' \cong 12 F(d) d^3 e^{-\frac{d}{\alpha}}, \qquad (2.35)$$

where F(d) increases with d (linearly); α is a parameter of the Card 4/7

"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500010013-1

3.8 A 8/183/61/006/385/.07/019 D274/D303

On the formation of impurity bands

same order as the lattice constant. The constant dof its intuitive lattice can be expressed by the concentration of input, its plants, viz.

 $\mathbf{d}^3 = \frac{\mathbf{v}}{\mathbf{N}_0} . \tag{3.36}$

It follows from (2.35) that even in the approximation replecting terms with $K_2(k)$, the decrease in band-width with decreasing inpurity concentration is much slower than would follow from a direct interaction between impurity sites. Due to the exponential factor $e^{-d/\alpha}$, the width $\Delta E'$ is small, and with an impurity concentration of $10^{14} - 10^{15}$ cm⁻³, it is close to zero. Taking into associate the dislocation migrations between the σ - and ρ sublattices, leads to a considerable change in the energy spectrum of the impurity carriers. In this case, the dependence (on concentration) of $\Delta E'$, can be ascertained by investigating the dependence (on concentration) of K_2 .

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On the formation of impurity beds

$$\widetilde{K_2}(\mathbf{k}) = 8 \sqrt{\frac{N_e}{N_e}} \left[\widetilde{K_2}(a') + 6c\eta \frac{N_e}{V} \right] \cos \frac{k_x a}{2} \cos \frac{k_y a}{2} \cos \frac{k_z a}{2}.$$
(3.27)

The width of the "doublet" impurity band is given by

$$\Delta E_{2} = 8 \left[\sqrt{\frac{N_{p}}{N_{s}}} \left[K_{2}'(a') + 6c_{1} \frac{N_{p}}{V} \right] \left[1 + \frac{P}{6P_{1}(a)} \right]^{2}.$$
 (7.17)

and that of the "hole" impurity band:

$$\Delta E_n = 8 \sqrt{\frac{N_p}{N_s}} \left[K_1'(a') + Gar_i' \frac{N_p}{V} \right] \left[1 + \frac{R - R_1}{6R_1(a)} \right]^{5}. \tag{3.18}$$

In conclusion, the main reason for the formation of impactly holds is the migration of elementary dislocations (loublets and originals, holes and singlets) from the principal sublattice to the apprity sublattice and conversely. The dependence of the width of the imparity band on concentration, follows a power law. Such a legendence makes it possible to understand the formation of imparity bands in the case of low concentrations. There are 4 reference: I beviet-

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On the formation of impurity bands

S/181/61/006/005/007/019 D274/D303

bloc and 1 non-Soviet-bloc (in translation).

ASSOCIATION: L'vivs'kyy derzhavnyy universytet im. I. Franka (L'viv State University im. I. Franko)

SUBMITTED:

August 8, 1960

Card 7/7

GLAUBERMAN, A.Ye.; KOBYLYANSKIY, V.B.; TAL'YANSKIY, I.I.

Distribution of neutrons in media with a cyclindrical interface and an off-axis source. Atom.energ. 10 no.5:513-515 My '61.

(Neutrons)

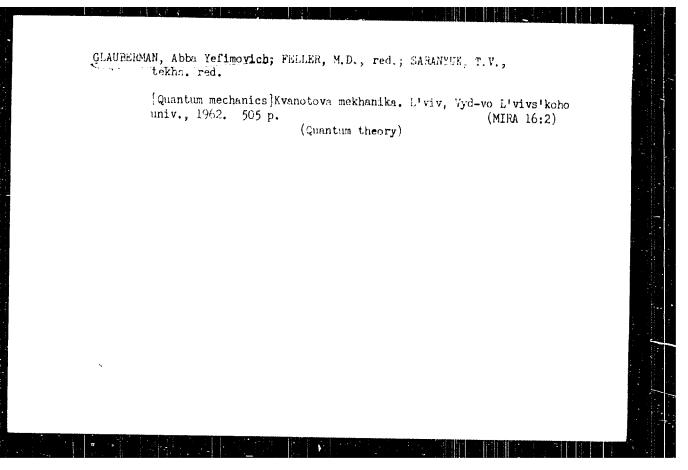
(Neutrons)

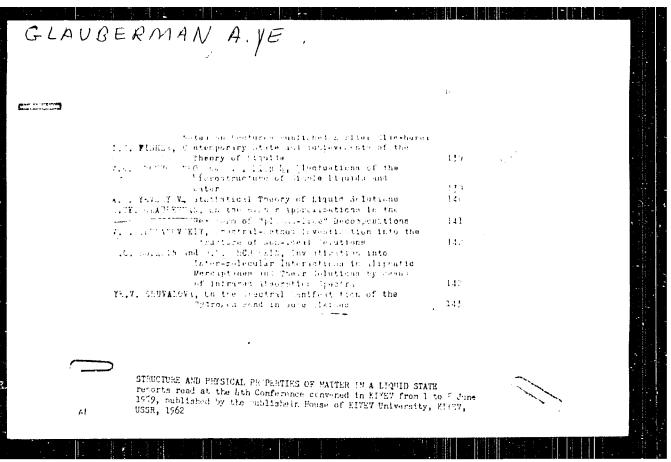
SHUMILOVSKIY, N.H., akademik, otv. red.; MIKHAYLOVSKIY, V.H., zam. otv. red.; GLAUBERMAN, A.Ye., doktor fiz.-mat. nauk, red.; SVENSON, A.H., kand. tokhn. nauk, red.; BETEZINSKIY, V.P., inzh., red.; SABANEYEV, n.D., nauchnyy red.; LIBELMAN, 1.R., tekhn. red.

[Instruments for geophysical studies of wells by radioactive methods, transactions] Pribery dlas geofizienerkikh issleic-vanii skvashin ordioaktivnymi retodami; trudy. Edev, Ind-vo Akad. nauk USSR, 1962. 190 p. (MIRA 15:9)

1. Vsesoyusnyy seminar po primeneniju midiocktivnykh izotopov v izmeritelinov tokhnike, Livov, 1960. 2 Abade iya nauk Kirgizskoy SSR (for Shunilevskiy). 3. Chlen-koprespondent Akademii nauk Ukrainskoy SSR (for Mikhaylovskiy)

(Endiocetive prespecting Equipment and supplies)





"APPROVED FOR RELEASE: 09/24/2001

CIA-RDP86-00513R000500010013-1

EWG(k)/EWT(1)/BDS/EEC(b)-2--AFFTC/ASD/ESD-3--Pz-4--AT/IJP(C) L 10046-63

ACCESSION NR: AR3000381

\$/0058/63/000/004/E071/E071

SOURCE: RZh. Fizika, Abs. 4E474

AUTHOR:

Glauberman, Ruvins'kiy, M. A.

TIME: Internal photoeffect in the polar model for the case of a nondegenerate spin-closed system

CITED SOURCE: Visnyk L'vivs'k. un-tu. Ser. fiz., no. 1(8), 1962, 45-49

TOPIC TAGS: Internal photoeffect, polar model, effective mass approximation

TRANSLATION: A theoretical investigation is made of the main features of the internal photoeffect by methods of nonstationary perturbation theory in the second-quantization representation and in the effective-mass approximation. The model of an atomic semiconductor is used, in which each atom has a shell consisting of two s-electrons. When light is absorbed there are generated in the crystal triplets and holes with oppositely-directed quesi-momenta, which act pairwise as carriers. The absorption of light has a resoment character with a resonant frequency that obeys the Einstein law for the photoeffect, formulated

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ACCESSION NR: AR3000381

for elementary excitations of the crystal in the assumed model. The end-point frequency of the internal photoeffect is determined by the activation energy of the hole-triplet pair. Unlike in the single-electron theory, the law of energy conservation is formulated for the entire many-electron system as a whole. The elementary character of the light-absorption process is retained only for elementary excitations of the entire crystal, and not for the individual electrons. This result does not depend on the specific model and is a general law. The absorption spectrum is a band whose width is determined by the width of the band of current states. Yu. Ravich

DATE ACQ: 14May63 ENCL: 00 SUB CODE: PH

cs/ 200 Card 2/2

GLAUBERMAN ω/1 - // ε/σσε/σσε/ - ././ ν νεχχικοί 24.2110 ..UT-CHU: . Tymblikev, S.V. and Mouberran, ...Ta. In the rangemention, theory of it will be not also as in we will in Subsection to the property of the contract of 250 - 259This stuar is related to an artists to type with a num and c.m. shagehor, in which the theory of it has distinct before your torn was developed by way of extending the scalar number to light or it. Its Ukr. Tiayon. sh., 5, 597, 1900). In here, (Cr. elsy a result matrix ain of quasiparticles was considered, obtained by taxing the statustical average of the Hamiltonian for an arbitrarily fixed scaff weather of atoms, over all possible configurations. The Hamiltonian of the system can be written in the form: $H = H_{bach, r}$, + $H_{exc.} = H_{c}$ + H_{e} + $H_{int.}$ where the exact Hamiltonian H $_{\rm back, Tr.}$ = H represents the kinetic on regularity Uard 1/4

CIA-RDP86-00513R000500010013-1 "APPROVED FOR RELEASE: 09/24/2001

2/105/04/201/205/205/20 28/3/2501

To the many-electron theory ...

of the atoms of the liquid and the interaction between those 1995, and H = H + H, represents the kinetic charge of the electric to a charge of intermediation of executions with the above, here the content of terms of terms electric terms of terms each of terms electric terms of terms electric terms of terms electric terms. terms, depending on the josition of several vicin. The nutations

$$\mathbb{H}_{o} = \mathbb{H}_{e} + \mathbb{H}_{e},$$

$$\overline{R}_{int.} = \frac{2}{\pi} \operatorname{sg} \left(\overline{R}_{int.} e^{-4R_0} \right),$$

$$\overline{H}_{\text{int.}} = \frac{1}{2} \sup_{\{i,j\}} \left(H_{\text{int.}} e^{-iH_{ij}}, \dots, H_{ij} \right), \quad \forall i \in \frac{1}{2^{n}}, \quad \forall i \in \frac{1}{$$

are introduced, where $\frac{dit}{dt}$ denotes taking the average over the transvariables. With the further notations

$$\overline{\mathbb{H}}_{0} = \mathbb{H}_{e} + \overline{\mathbb{H}}_{int.} + \mathbb{H}_{i} = \overline{\mathbb{H}}_{e} + \mathbb{H}_{i}$$

Car4 6/4

CIA-RDP86-00513R000500010013-1" APPROVED FOR RELEASE: 09/24/2001

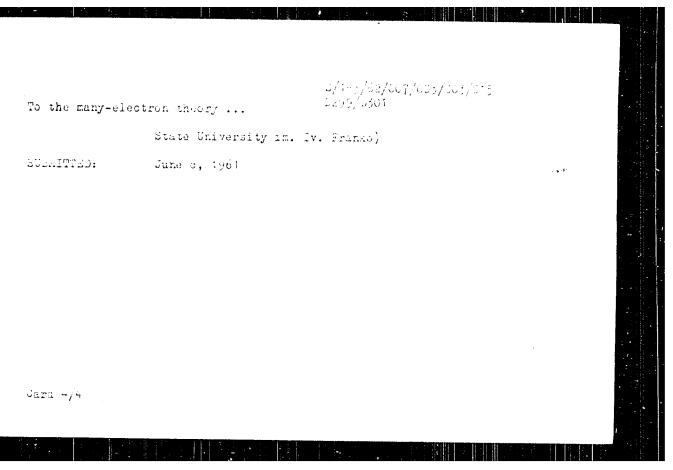
The the many-electron theory ... $\frac{a/V \log x (a) (V)}{a/V (a) (V)} = \frac{a}{V} \left(\frac{a}{V} \right) \left(\frac{a}{V$

In the same approximation, it is possible to replace a to the overly a limitation $H_{\hat{\theta}}$, when calculating the sean values of quantities, whose operators act only on the excitation variables. Analogously, an approximate equation is derived for Green's function; this equation contains $H_{\hat{\theta}}$ (instead of H). There are \hat{j} Soviet-bloc references.

ASSOCIATION:

L'vivs'kyy dershuniversytet im. Iv. Franka (L'viv

Card 3/4



14.2110 AVINGILL: mendern h, h. M. and Busychuk, c.k. on the theory of thing-out provided an eight of histin-Tarapan tary flaggraph when I, v. V. A. J. Cot. 64 - 797 : Transport prodesies in liquid designaturement achdisers on the names of the theory, developed by the authors in an eleger to the fact. It out. They are, un., , , 10%, 1000s; the results of the product article (in the thous,). 250 - 259) are also used. The entity excitation-Hamiltonian for a fixed configuration of atoms in written in the form: $H = \overline{H} + (H + \overline{H})$ the quantity (H+H) is interpreted as a perturbation [the subscript of $H_{\rm ext}$] but been aroused, hence H senotes $h_{\rm ext}$]. A liquident script. Cara 1/3

8/168/68/001/668/664/619 3019/6861

On the theory of transpart ...

another in pressure lectric (F) and adjusted (F) fields or concluded; the dependence of the connectivity on the advances field attempth is externined. On the bulls of the mether of attrionant tests of a court that the purpose ever all the atomic configurations, is non-zero. I formula in derived, relating the operators of the quarrantees (or pend of) in E, to those in H. The Emmittee E is distinctive.

The perturbation \angle H of H = H, which calls forth the estimate, is allowed in terms of the operators, and a, which disconsize H. A forward in terms of the operators, and a particle which share their state as a result of the perturbation. After compositions, one datalon, in approximate forms. For the resistance a line week magnetic field $\begin{pmatrix} 0 & y & y \\ 1 & y \end{pmatrix}$, where $\begin{pmatrix} 0 & y & y \\ 1 & y \end{pmatrix}$, where $\begin{pmatrix} 0 & y & y \\ 1 & y \end{pmatrix}$

prescible). Thus the relationing between the restations on a continuities of the silential strangent in a prescible, to an important in appetuing whereas the tamparature repeatence of the field of rength is considered by man.

Jard 3, 5

On the theory of transport ...

Somptication. There are a references: 6 Doviet-blocking a non-doviet-bloc. The reference to the Amplich-language publication reasons follows: in horizon, Ann.laga., 7, 861, 1931.

ASSECTIATION: It vivo keys derended the Int. Iv. Franco (hiving State Shiverofty in. Iv. Franco)

SUBMITTED: June 8, 1961

ACCESSION NR: AP4012026

s/0185/64:/009/001./0003/0013

AUTHOR: Glauberman, A. Yu.; Stasyuk, I. V.

TITLE: The method of nodal elementary excitations in the theory of semiconductors

SOURCE: Ukrayins'ky*y fizy*chny*y zhurnal, v. 9, no. 1, 1964, 3-13

TOPIC TAGS: semiconductor, Frenkel exciton, non-metallic crystal, nodal excitation, quasi particle

ABSTRACT: A general, precise theory of nodal elementary excitations for nonmetallic crystals has been developed, in which the ground state of the system is, consistently separated by the variational method. In the general case two branches of nodal excitations are established analytically. One of them describes charged quasiparticles which transmit current, and the corresponding various Frenkel excitons. The operators of this branch obey quasi-Pauli commutation relations. The method is illustrated on a simple spin-compensated background model, i. e., an atomic crystal in the ground state of which two electrons with oppositely directed spins are located at every node of the lattice.

Card 1/2

ACCESSION NR: AP4012026

Orig. art. has: 41 formulas.

ASSOCIATION: L'vivs'ky Derzhuniversytet im. Iv. Franka (L'vov State

University)

SUEMITTED: 27Jun63

DATE ACQ: 14Feb64

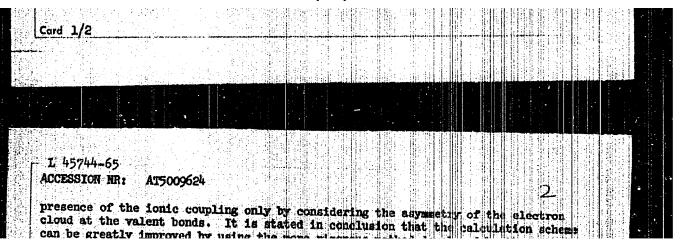
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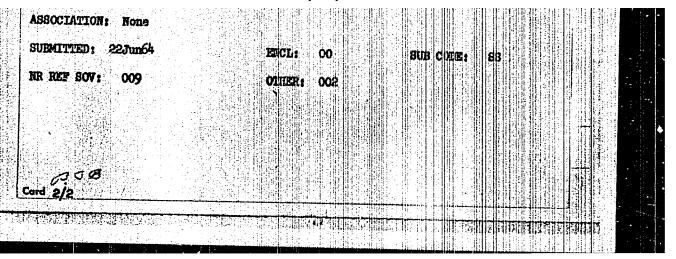
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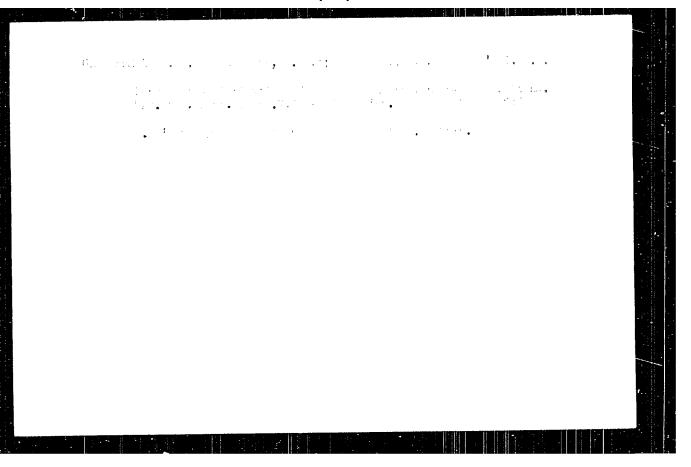
NO REF SOV: 012

OTHER: OOL

Card 2/2







GRAUBERGAN, A.Ye.: POPOL*, A.M. (Popel*, C.M.)

Photoerfoot with exciten involvement. Ukr. fiz. minr. If no.8:
925-926 Ag 165.

1. Liverskiy gosudarstvennyy universitet im. I.Franko.

L 26059-65

ACCASSION NR: AP5004512

It possible to describe in a unified manner in terms of site excitations, excitations involving current carriers, spin excitations, Frankel (tightly bound) extitons. Mott (weakly bound) excitons, etc. The topics mentioned and discussed in

ACC NRI ar6036980 (N,A)

SOURCE CODE: UR/0181/66/666/011/3335/3338

AUTHOR: Glauberman, A. Ye.; Ruvinskiy, M. A.

CRG: L'vov State University im. I. Franko (L'vovskiy gosudarstvennyy universitet)

TITLE: Influence of excitons on the absorption of ultrasound in piezoelectric semiconductors

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3335-3338

TOPIC TAGS: ultrasound absorption, exciton, piezoelectric effect, elastic scattering, absorption coefficient, semiconductor crystal

ABSTRACT: The article is devoted to the absorption of sound resulting from interaction between excitons and longitudinal piezoelectric oscillations, under the assumption that the mean free path of the exciton is much larger than the length of the sound wave. The excitons are assumed to be nonlocalized, of the Wannier-Mott type. The piezoelectric interaction between the excitons and the sound may turn out to be so large that even when screened by free charges it leads in many cases to noticeable acoustic effects. The feasibility of separating the exciton absorption from the electronic absorption is first discussed. The absorption coefficient is determined with allowance for elastic scattering only, under the assumption of Maxwell-Boltzmann statistics. The result is then approximated for a cubic crystal such as CdS, and a value of 1.2 - 12 db/cm is obtained for the absorption coefficient. Estimates show that to produce a stationary exciton concentration of 1014 1015 cm-3

Card 1/2

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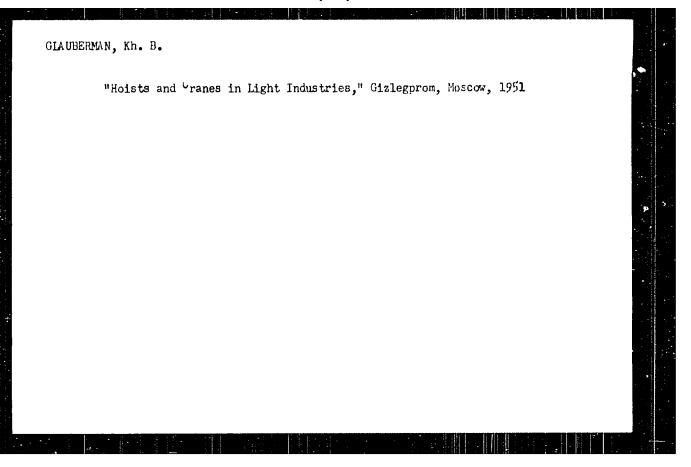
GLAUBERMAN, A.Yu.[Hlauberman, A.IU.], prof., otv. red.; RYBALKA,
V.V., red.; CYD!KIV, M.T., dots., red.; VICHNEVSKIY, V.E.,
[Vyshnevs'kyi,V.N.], dots., red.; YUKHNOVSKIY, I.k.
[IUkhnovs'kyi, I.R.], dots., red.; PALYUKH, B.M., dots.,
red.; KVITKO, I.S., red.

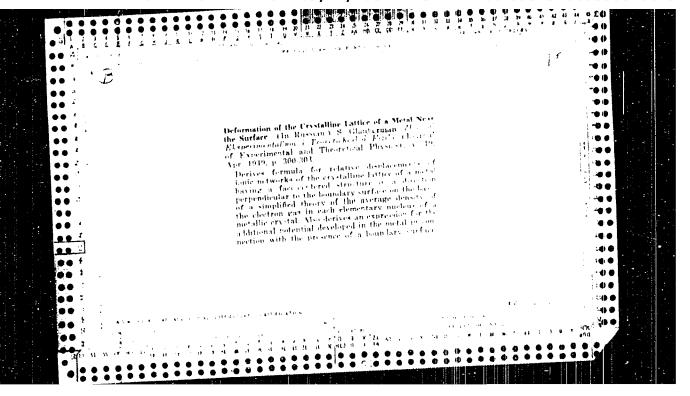
[Froblems in solid state physics] Fvtannia fizyky tverdoho
tila. L'viv, Vyd-vo L'vivs'koho univ., 19c., 117 p.

(MIRA 17:11)

1. Lvov. Universytet.

L 41745-66 EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) JD/AT SOURCE CODE: UR/0195/66/011/006/0673/0675 ACC NR: AP6018040 AUTHOR: Glauberman, A. Yu.; Ruvins'kyy, M. A .-- Ruvinskiy, ORG: L'vov State University im. I. Franko (L'vivs'kyy derzhuniversytet) TITLE: Capture of free Wannier-Mott excitons in atomic crystals by shallow traps SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 6, 1966, 673-675 TOPIC TAGS: exciton, phonon, wave function, Schroedinger equation, capture cross section, energy band structure, crystal theory ABSTRACT: The authors present the results of a quantum-mechanical analysis of the thermal capture of free excitons in atomic crystals by shallow traps whose energies lie at a distance smaller than the Debye end-point energy of the phonon below the bottom of the exciton band. The interaction between the exciton and the phonons is described with the aid of a Bardeen-Shockley potential. The probability of the process is calculated by using for the initial state a wave function obtained by solving the Schroedinger equation for the free exciton in the field of a singly-charged Coulomb center. The value obtained for the cross section of capture of the free Wannier-Mott excitons by this method is found to be the same as obtained by the methods of classical mechanics. Orig. art. has: 4 formulas. ORIG REF: 003/ SUB CODE: 20/ SUBM DATE: 11Jan66/ OTH REF: 005





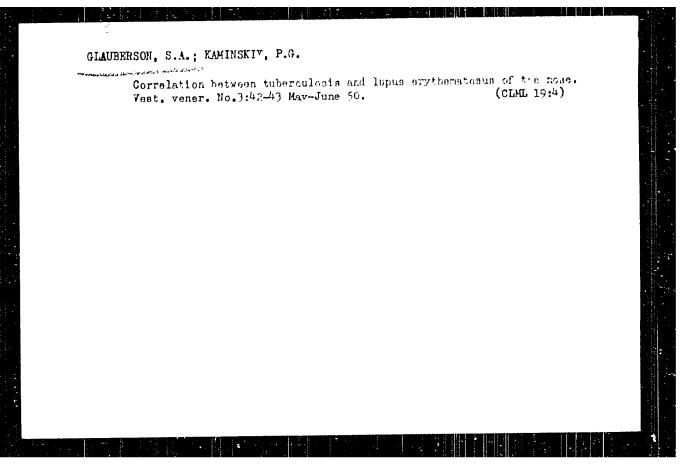
"An Experiment in Treating Ozona and Atrophic Rhinitis with Colloid Solutions of deavy Metals," Vest. Oto-rino-laringol., No.3, 1949.

Otorninolaryngology Clinic Chair of Pathological Physiology, Voronezh Med. Inst.

GLAUGERMAN, S.B.

Sub-periosteal administration of penicillin in acute otitis and mastoiditts due to scarlet fever. Vest. otorinolar. Moskva 14 no. 4:80-81 July-Ang. 1952. (CIML 22:5)

1. Candidate Medical Sciences. 2. Of the Clinic for Diseases of the Ear, Throat, and Nose (Director -- Prof. T. Ya. Abranov), Voronezh Medical Institute.



CLAUBERCON, M.Ya.; PAVLYCHEV, I.M.

Pneumatic mail transportation in the Lycy telegraph and telephone exchange. Vest. sviazi 25 nc.9:16-17 S '65. (MIEA 18:9)

1. Nachal'nik L'yovakcy telegrafno-teleformay stantali (for Glauberzon).

2. Glavnyy insh. L'yovakcy telegrafno-teleformay stantali (for Pavlychev).

KNORRING, G.M., kandidat tekhnicheskikh nauk; GLAUBERWON, Ye.M., inzhener

Fluorescent lighting in sewing shops of a clothing factory. Svetotekhnika l no.5:17-20 0!55.

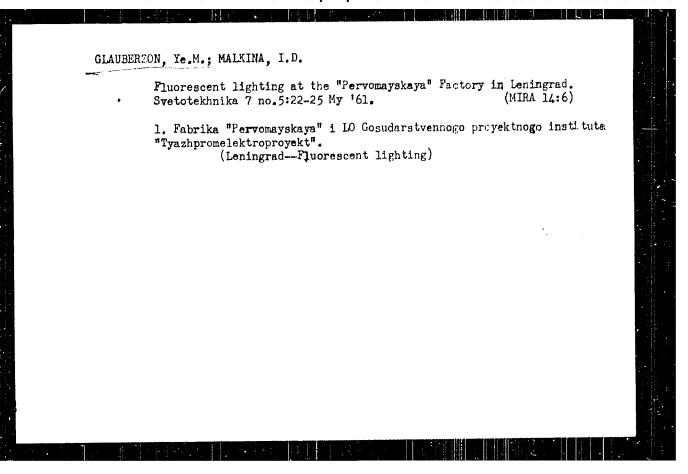
(MERA 8:12)

(Factories-----ighting) (Lighting, Fluorescent)

MINKIN, Anatoliy Samuilovich, kand. tokhn. nauk; GLAUHERZON, Yavgeniy Mironovich; ANDREYEV, A.I., red.; FREEER, D.F., red. izd-va; GVIRTS, V.L., tekhn. red.

[Repair and operation of certain kinds of machines and electric equipment at garment factories in Leningrad] Remont i expluatational nekotorykh vidov tekhnologicheckogo i elektrotekhnicheskogo oborudovaniia na shveinykh fabrikakh Leningrada; obzor. Leningrad, 1961. 87 p. (MIPA 14:7)

(Leningrad-Clothing industry)

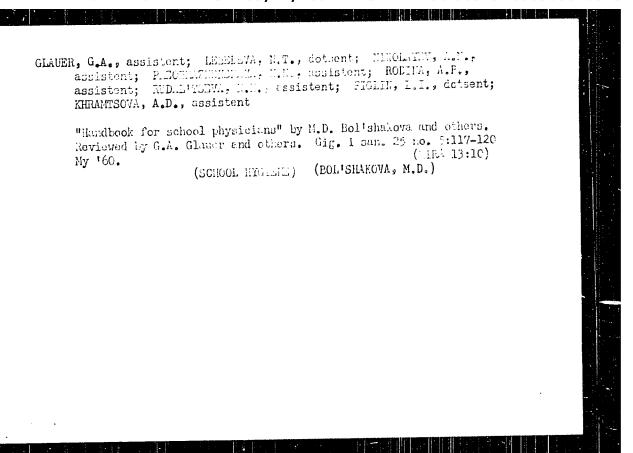


Penetration of solar ultraviolet rays through naterial used in making summer clothing for children. Trudy LSGMI 31:160-173 (56.

1. Kafedra shkol'noy gigiyeny Leningradskogo sanitarno-gigiyeni-cheskogo meditsinskogo instituta (zav.knfedroy - prof. A.Ya. Gutkin).

(CLOTHING penetration of solar ultraviolet rays through material for clothing for child. (Rus))

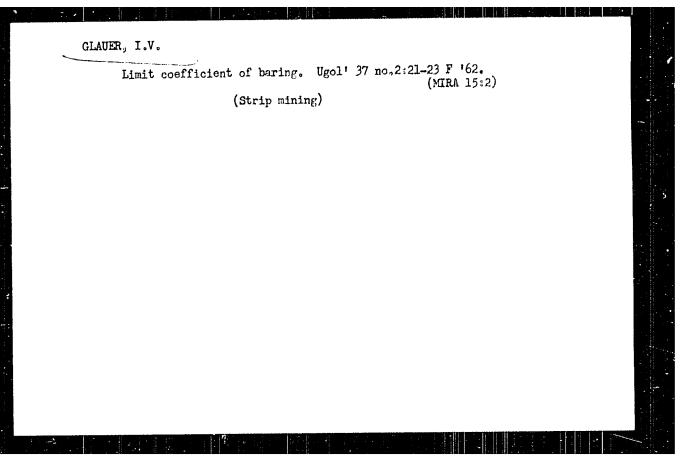
(ULTRAVIOLET RAYS, same)



GUTKIN, A.Ya., prof.; GLAUER, G.A.; NIKOLAYEV, A.N.; PREOBRAZHENSKAYA, N.N.; RODINA, A.P.

Physical growth of school children in Kirovsk (Arctic region). Gig.i san. 25 no.8:23-27 Ag '60. (MINA 13:11)

1. Iz kafedry gigiyony detey i podrostkov Leningradskogo sanitarnogigiyonichoskogo meditsinskogo instituta. (COLD---PHYSIOLOGICAL EFFECT) (KIROVSK----CHILD::EN-----GROWTH)



GLAUER, I. V., gornyy inzh.

Calculating the width of the mase of broken rock resulting from blasting benches in pits. Ugol' 38 no.4:26-28 Ap '63.

(MIRA 16:4)

(Blasting) (Strip mining)

GLATERIA, L. 5.

Remoters, H. S. and Reznik, B. Y.- "The discrimation of an indeed y the indeed of the circ matter," larger as index (Due repeats on a con-t), relaximity, 1787, p. 130-60

So: a-5680, 17, Bec. 53, (Leteris 'Therast 'Quin J. 17, No. 11, 1889).

GLAUZE, G.F. (Prof.)

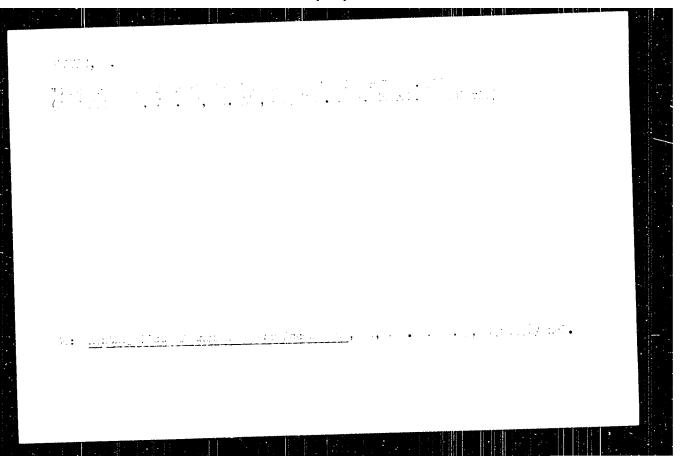
"Effect of Antiobiotics on Development of Viruses and Malignant Tumors,"

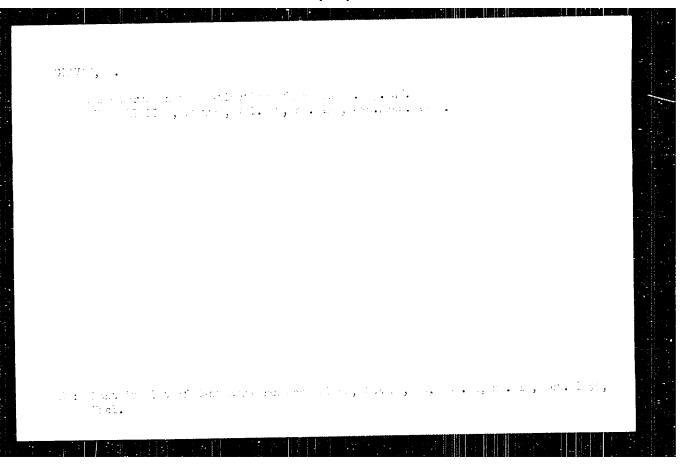
p. 103 Ministry of Health UCSK Proceedings of the Second All-Union Conference on Antibiotics, 31 May - 9 June 1957. pp. 405, Moscow, Medgiz, 1957.

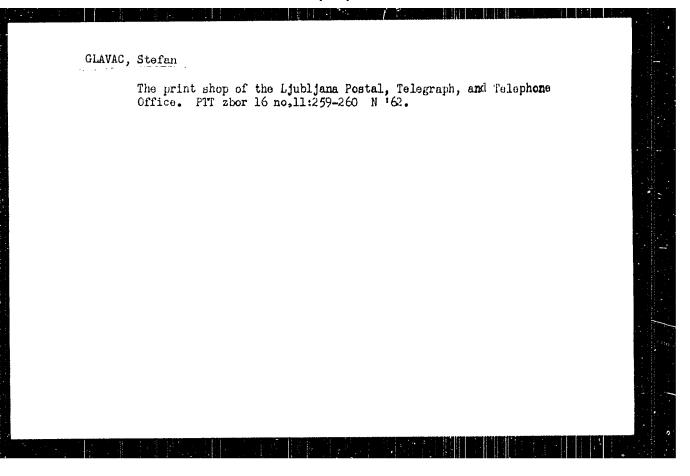
GLAVA, Cornel, ing.; ROSENTFAL, Gabriel, ing.; RADM, Andrei

Considerations on the salt baths with indigenous substances for thermochemical and thermal treatments. Metalurgia constr mas 14 no. 3:207-212 Mr 162.

1. Institutul Tehnologić pentru Constructii de Masini si Electrotehnica.







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GLAVACH, F. [Havac, F.]

At building projects in Czeche levekia. Zhil. strai. ns.6:28-29 '62.
(MER 19:7)

1. Direktor & uchno-issledovatel skogo instituta po straitel'stvu
v Prage.

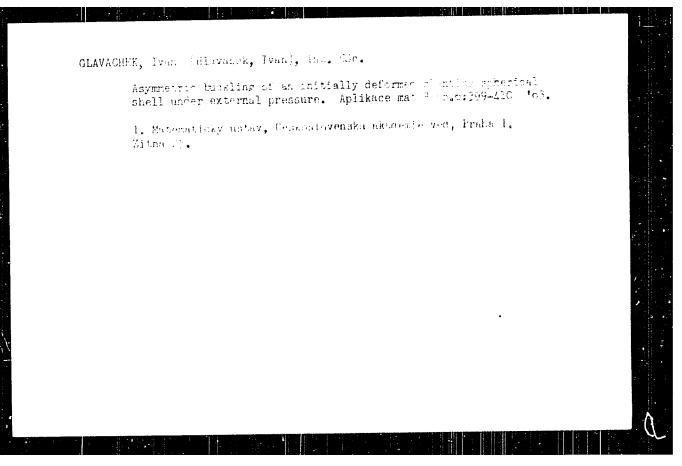
(Gwechesh waste A, srivent houses)
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BILEK, Vatslav, inzhener; BLATTNYY, TStipor, inzhener, doktor; BROZHEK,
Karl, inzhener; LXGNAL, Lyudvig; GLAVACHEZ, Frantishek; LGOTSKIY,
Alois, inzhener, doktor; MAKHAT, Frantishek; LALAE, Throslav;
OSVAL'D, Vladimir, inzhener; EUZHICHKA, Moymir, inzhener; SALACH,
Vatslav, inzhener, doktor; TRKAN, Miroslav, inzhener; ZHILA, Vladimir; SHKOP, Ya., inzhener [translator]; MEDINTSKV, M., inzhener,
[translator]; MASLOVA, Ye.F., redaktor; GOTLIB, E.M., tekhnicheskiy
redaktor.

[Techology of malt and beer] Tekhologiia soloda i piva. Avtorskii kollektiv Vatslav Bilek i dr.Avtoriz.perevod s cheshskogo IA.Shkopa i M.Medintseva, Moskva, Pishchepromizdat. Vol. 1.[Malt production] Proizvodstvo soloda. Translated from the Czech. 1957. 285 p. (MIRA 10:6)

(Malt)

46 W 1 W



GLAVACHEK, V. [Hlavacek, V.] (Fraga); YIRZHICHNY, Y. [Jiricny, J.] (Praga)

Hormone therapy of allergic rhinitis. Zhur.ush., nos.i gorl.bol.
21 no.6:10-14 N-D '61. (MIRA 15:11)

(HORMONE THERAPY) (ALLERGY) (NOSE-DISEASES)

ACCESSION NR: AP4045165

AUTHOR: Hlavacek, Vladimir (Glavachek, Vladimir);
Stepanek, Josef (Shtepanek, Iosef)

TITLE: Heat transmission during drop condensation on silicons varnish

SOURCE: Chemicky prumysl, no. 9, 1964, 478-480

TOPIC TAGS: heat transmission, silicons varnish, heat transfer coefficient, heat flow coefficient, thermal characteristic, drop condensation

ABSTRACT: Experiments made to determine the possibility of using silicons varnish nishes on condensers have shown that drop condensation on silicons varnish takes

